HASSAN DISTRICT

CHAPTER I

GENERAL

HASSAN, which is one of the 19 districts of the new Mysore State, is situated in the south-western part of the State. The district has had an eventful and rich history. In the past, it reached the height of its glory during the rule of the Hoysalas who had their capital at Dorasamudra, the modern Halebid in Belur taluk. The district, noted for its enchanting natural scenery of *malnad* (a mainly forested, hilly region of heavy, reliable rainfall) is also a veritable treasure-house of the Hoysala architecutre and sculpture, the best specimens of which are at Belur and Halebid. Shravanabelgola, in Channarayapatna taluk, which is studded with Jaina monuments, is a renowned centre of pilgrimage for the Jains.

Origin of name

Like most of the other districts in the State, this district also derives its name from its headquarters town, Hassan. According to the *Sthalapurana,* the name 'Hassan' is a contraction or derivative of 'Simhasanapura', associated with Janamejaya, a great grandson of the Pandava hero, Arjuna.* But the popular belief is that the place is called Hassan after the goddess Hasan-amma or Hasanamba, the presiding deity of the local Hasanamba temple situated in the old town area. Hasanamma or Hasanamba means, in Kannada, a smiling mother or goddess. In this connection, a traditional story, as to how the goddess Hasanamba came to be established at this place, is narrated thus: The *Saptamatrikas* (seven mothers or goddesses), in the course of their journey from *Varanasi* (Kashi) to the South, were pleased with the scenic splendour of this area and decided to make it their abode. Accordingly, of the seven mothers, who were sisters, three settled at Hassan and another three in a tank called Devigere, also in Hassan proper, and were called Hasanamba, while the other one settled in a forest near Kenchammana-Hoskote in Alur taluk and was called Kenchamba.

**Mysore Gazetteer,* Vol. V, 1930, p. 1003.

Historically speaking, there was only a village called Channapatna, adjacent to the place where the Hassan town now stands. It was founded in the 11th century by Bukka Nayaka, an officer deputed by a Chola king to put down the neighbouring petty chieftains. After achieving success in his enterprise, he built a fort and a *petta* (town) on the site of his encampment and named the place Channapatna, meaning a beautiful town. He and his successors ruled here for well over a century, after which it passed into the hands of the Hoysala kings, one of whom conferred it on a chieftain, Sanjeeva-Krishnappa Nayaka. The latter is said to have founded the present Hassan town, sometime in the 12th century. In this connection also there is a story, again based on tradition, which traces the circumstances under which the new town was built.

It is said that once a hare entered the gates of the old town. Sanjeeva-Krishnappa Nayaka was much distressed at this bad omen ; then Hasanamma, the smiling goddess, appeared before him in a dream and directed him to build a fort on the spot from where the hare had started and where he would find her image. He did accordingly and named the place Hasana (later anglicised as Hassan) after the goddess. Though the legendary accounts have no historical basis or whatever, there appears to be some truth in the popular belief that the place is so named after Hasanamba, the presiding deity of the local temple of the same name. However, no inscriptional or historical evidence confirming this has come to light as yet. But the word 'Hassan' occurs in an inscription in a *Veeragal* dated in the year 1140 A.D. found at Kuduregundi village in Hassan taluk.

Location

The district, situated between 12°-31′ and 13°-33′ north latitude and 75°-33′ and 76°-38′ east longitude, is in the south-western part of the State. The greatest length of the district, from north to south, is about 80 miles or 129 kilometres, and its greatest breadth, from east to west, is about 72 miles or 116 kilometres.

General boundaries

It is bounded on the north by Chikmagalur district, on the east by Tumkur and Mandya districts, on the south by Mysore and Coorg districts and on the west by South Kanara district.

Area and population

The geographical area of the district, according to the Central Statistical Organisation of the Government of India, is 6,826.15 square kilometres, which works out to 2,635.60 square miles. But the reporting area of the district for land utilisation purposes, as worked out by the State Survey, Settlement and Land Records Department, is 6,940.4 square kilometres or 2,679.7 square miles. This slight difference is due to the different methods employed by them in measuring the area. The population of the district, according to the census of 1961, was 8,95,847, of which 4,55,055

were males and 4,40,792 were females. (According to the provisional population totals of the 1971 census, the population of the district has increased to 10,98,884). Hassan is one of the smaller districts in the State. In respect of area, as per the figures of the Central Statistical Organisation, it occupies the 16th place among the districts of the State, while in respect of population it gets the 15th place. It accounts for about 3.6 per cent of the total area and 3.8 per cent of the total population of the State. The density of population in the district in 1961 was 131 per square kilometre or 334 per square mile and this was above the State average, which was 123 per square kilometre or 319 per square mile. The district occupied the eighth place among the districts of the State in this respect.

History of district as an administrative unit

In the early period of the known history of this region of the State, parts of this district were included in the kingdoms of the Kadambas and the Western Gangas (from about the 4th century to the 11th century). The Kongalvas, according to their inscriptions dating from 1020 to 1177, ruled over a small kingdom situated mainly in the Arkalgud taluk, between the Cauvery and the Hemavathy rivers. The Changalvas also held sway over a part of the district for a long period from the 10th century. But the district is more particularly identified with the rise of the Hoysala power. The dynasty came into prominence in the 11th century and continued in power till about the middle of the 14th century. The Hoysala kingdom, which had been extended vastly, was very prosperous. The district next came under the rule of the Vijayanagara kings, who had eventually become paramount over all the regions south of the Krishna. They are said to have taken a particular interest in the province of Balam, the centre of which was the present Manjarabad, the area which was the former stronghold of the Hoysalas, and people of all castes were encouraged to settle there by granting them land at little or no rent. The wealthier among the immigrants were made patels and received large *inams*. Later, all the western portions of the district, along with the adjoining tracts above and below the ghats, were bestowed upon one Veena Ramappa, a court musician. Again, after some years, *i.e.*, in 1397, the entire province of Balam, then yielding a revenue of three lakhs of pagodas, was made over by the Vijayanagara rulers to Singappa Nayaka, one of their generals and son of an old *paleyagar*. The Balam *paleyagars* had their capital at Aigur, in the present Manjarabad taluk, and ruled for some generations.

In 1633, the Mysore Rajas gained possession of Channarayapatna from the *paleyagar* of Holenarsipur. But shortly afterwards, Shivappa Nayaka of Ikkeri occupied a part of Balam province and held it for 37 years. However, under a treaty concluded in 1694 between Mysore and Ikkeri, six *nads* or revenue circles of Manjarabad were ceded to the old chiefs and the remainder of the

Balam province was divided between the two contending parties. From this time, the whole of Hassan district, except Manjarabad, formed a part of the Mysore territory. The Arsikere taluk appears to have suffered considerably from the raids of the Marathas and at one time was even handed over to them as security for the payment of tribute. Krishnappa Nayaka was ruling Balam during Tipu Sultan's time. As a result of his joining the camp opposed to the Sultan, the former fled to Coorg fearing the Sultan's displeasure. But Tipu induced him to return and, however, gave him the government of Aigur-sime, forming the south of Balam. His son, Venkatadri Nayaka, was in possession of Aigur-sime during the fall of Srirangapatna in 1799.

Territorial changes

During the last century, the Hassan district first formed part of the Patnada Rayada, and was then called the Manjarabad Faujdari. From 1832, it was included in the Ashtagram Division, which was, however, abolished at the time of the Rendition in 1881.

The Krishnarajpet and Nagamangala taluks, which now form parts of Mandya district, were a part of the Hassan district upto 1882. Consequent on a revision of territorial divisions of the State, these two taluks were detached from the Hassan district during that year and included in the Mysore district. Till 1882, Banavar and Harnahalli were headquarters of two different taluks of the same name. While Banavar taluk was included in the Kadur district, Harnahalli taluk was in Hassan district itself. In 1882, Banavar taluk was abolished and was absorbed in the Arsikere taluk and transferred to the Hassan district. Similarly, Harnahalli taluk was also abolished and absorbed in the same taluk. The Arkalgud taluk, which initially consisted of ten hoblies (revenue circles), was also abolished in 1882 and its hoblies were distributed among the adjoining taluks. During the same year, the district was reduced to a sub-division under Kadur district, with only four taluks, *viz.*, Arsikere, Belur, Hassan (with Grama sub-taluk) and Manjarabad. However, the Arkalgud taluk was revived in 1886, but with only six hoblies, and during that year, Hassan was re-established as a district with seven taluks, *viz.*, Hassan, Manjarabad, Belur, Arsikere, Channarayapatna, Holenarispur and Arkalgud and a sub-taluk, *viz.*, Grama, unedr Hassan taluk. In 1894, the Grama sub-taluk was abolished and in its place Alur, which was the headquarters of the old Maharajanadurga taluk till 1875, was made a sub-taluk under Hassan taluk. In 1904, the number of hoblies of the Arkalgud taluk was further reduced to five by distributing the villages of one hobli among the remaining hoblies. Later, in 1941, Alur was also made a full-fledged taluk, and, since then, the district came to have eight taluks as at present.

The eight taluks of the district were divided into three revenue sub-divisions, *viz.*, Hassan Sub-Division, Holenarsipur Sub-Division

and Sakleshpur Sub-Division, for administrative purposes. While the Hassan Sub-Division consisted of Hassan and Alur taluks, the Holenarsipur Sub-Division had, under it, the taluks of Holenarsipur, Arsikere, Channarayapatna and Arkalgud. The Sakleshpur Sub-Division consisted of the remaining two taluks, *viz.*, Manjarabad and Belur. The Holenarsipur Sub-Division was, however, abolished in 1929, and since then there have been only two revenue sub-divisions in the district, *viz.*, Hassan and Sakleshpur. Now the Hassan Sub-Division consists of Hassan, Arsikere, Channarayapatna, Holenarsipur and Arkalgud taluks, while the taluks of Manjarabad, Belur and Alur come under the jurisdiction of the Sakleshpur Sub-Division. The following table indicates the area, as per the figures of the Survey of India, of each taluk and also the number of inhabited villages and the population of each as per the 1961 census :—

Sl. No.	*Name of taluk*	*Area in*		*No. of inhabited villages**	*Population (as per 1961 census)*
		Square kilo-metres	*Square miles*		
1.	Alur	446.87	172.54	236	49,182
2.	Arkalgud	679.51	262.36	259	1,06,786
3.	Arsikere	1,286.88	496.87	319	1,67,806
4.	Belur	836.10	322.82	337	1,02,769
5.	Channarayapatna ..	1,042.26	402.42	365	1,40,679
6.	Hassan	904.91	349.39	355	1,61,763
7.	Holenarsipur	602.43	232.60	200	89,340
8.	Manjarabad	1,027.19	396.60	220	77,522

*In addition, there were 286 uninhabited villages in the district.

These eight taluks have been further sub-divided into 38 hoblies or revenue circles, each of which, in turn, consists of about 40 to 80 villages on an average. The sub-joined statement shows the number and names of hoblies grouped under each taluk in the district for purposes of revenue administration :—

Sl. No.	*Taluk*	*No. of Hoblies*	*Name of Hoblies*
1	2	3	4
1.	Alur taluk	4	1. Alur Kasaba
			2. Kenchammana-Hoskote
			3. Palya
			4. Kundur

1	2	3	4
2.	Arkalgud taluk	5	1. Arkalgud Kasaba
			2. Magge
			3. Mallipatna
			4. Ramanathapura
			5. Konanur
3.	Arsikere taluk	5	1. Arsikere Kasaba
			2. Kanakatte
			3. Banavara
			4. Javagal
			5. Gandasi
4.	Belur taluk	5	1. Belur Kasaba
			2. Biccodu
			3. Arehalli
			4. Madihalli
			5. Halebid
5.	Channarayapatna taluk ..	6	1. Channarayapatna Kasaba
			2. Dandiganahalli
			3. Bagoor
			4. Nuggihalli
			5. Hiresave
			6. Shravanabelgola
6.	Hassan taluk	5	1. Hassan Kasaba
			2. Kattaya
			3. Shantigrama
			4. Dudda
			5. Salagame
7.	Holenarsipur taluk ..	3	1. Holenarsipur Kasaba
			2. Hallimysore
			3. Halekote
8.	Manjarabad taluk ..	5	1. Sakleshpur Kasaba
			2. Belagodu
			3. Hanbal
			4. Hethur
			5. Yeslur

Natural divisions

The district lies partly in the *malnad* tract and partly in the southern *maidan* (plains) tract. Taking into consideration the physical aspects, climate, rainfall, etc., the district may be divided into three regions, *viz.,* (1) southern *malnad,* (2) semi-*malnad* and (3) southern *maidan.* While the western and north-eastern portions of the Belur taluk, western and central parts of the Alur taluk and the whole of the Manjarabad taluk constitute the southern *malnad* region, the central part of the Arkalgud taluk, the western portion of the Hassan taluk, the eastern portion of the Alur taluk, the central and eastern parts of the Belur taluk and the western part of the Arsikere taluk form the semi-*malnad* region. The southern *maidan* region includes the whole of the Holenarsipur and Channarayapatna taluks, eastern parts of the Arsikere and Hassan taluks and the south-eastern portions of the Arkalgud taluk.

The southern *malnad* is a forest-clad hilly region with a heavy rainfall. On the western periphery are the picturesque ghats extending from the pass at Bisle Ghat to the Jenkal-betta, with some lofty peaks in them. The following description of the *malnad* region of the district by Major Montgomery, by and large, holds good even to-day :—

" The character of the country is generally undulating till on approaching the ghats, when it becomes precipitous. Perhaps there is no scenery in India more beautiful than the southern part of this tract, adjoining the north-west of Coorg. It resembles for the most part the richest park scenery in England : hills covered with the finest grass or equally verdant crops of dry grain adorned and crowned with clumps of noble forest trees, in some instances apparently planted most carefully, and certainly with perfect taste ...The southern differs from the more northerly and westerly parts of the Manjarabad taluk, in the absence of that succession of dense jungles which obscure the view, and in the soft character of the hills, which are in most instances quite free from the stunted date.....But the whole taluk is beautiful and less wooded than Coorg or Nagar though greatly partaking of the features of both".*

The features of the semi-*malnad* region fringing the *malnad* area on the east are, more or less, similar to those of the *maidan,* but the climate, the forest vegetation and the economic situation have strong similarities with the *malnad* proper. The villages here are more compact than in the *malnad,* but somewhat isolated. The rainfall in this region is lower than in the *malnad* area.

The southern *maidan* is much larger in extent than the other two regions and is also the most populous region of the district

**Mysore Gazetteer,* Vol. V, 1930, pp. 876-877.

It consists of an undulating plain country, generally cultivated, with some extensive *kavals* here and there. Patches covered with wild date palm are common and in some parts can be seen limited tracts of stunted jungle growing upon a gravelly or gritty soil. The high-lying lands, particularly in the Hassan, Channarayapatna and Holenarsipur taluks, present a bare and bleak appearance and are so stony that they are not fit for cultivation. They, however, serve as good catchment areas for tanks.

The general level of the district slopes with the course of the Hemavathy except in the ghat ranges. The statement given below shows the elevation, above the sea-level, of each of the taluk headquarter towns in the district :—

Sl. No.	*Name of place*	*Elevation*	
		in feet	*in metres*
1.	Alur ..	3,175	968
2.	Arkalgud ..	3,085	940
3.	Arsikere ..	2,666	813
4.	Belur ..	3,150	960
5.	Channarayapatna ..	2,771	845
6.	Hassan ..	3,084	940
7.	Holenarsipur ..	2,840	866
8.	Sakleshpur (Manjarabad) ..	2,998	914

Hills

The Manjarabad area of the district rests on the brow of the Western Ghats and comprises some of the most beautiful scenery in Mysore State. Elliot in his *Experiences of a Planter* has described this region thus :

> "....Even amongst the hills themselves the contrasts are very striking, and nature seems to have furnished in a single group every variety of mountain conceivable....From a piece of elevated land may be seen a complete amphitheatre of frontier mountains, presenting the greatest variety of character ; one an overhanging precipice of rock, from which you may drop a stone thousands of feet into the gorge below ; the next all grass, and softly rounded at the summit with cattle grazing on the slopes ; a third rising abruptly into a pointed peak, with feathery strips of jungle clothing the lower ravines, and extending far up to the mountain-side ; while to the north of the group stretches a barren, serrated, rocky range, which in turn is broken by hills of a milder type". (*Mysore Gazetteer, Vol.* V, 1930, p. 1019) .

As already stated, the hills forming the western limit of the district extend from the pass at the Bisle Ghat to the Jenkal-betta and include peaks like Pushpagiri or Subramanya close to the south-west border rising to a height of 5,626 feet, or 1,715 metres, Devarabetta (4,206 feet or 1,282 metres), Murukangudda (4,265 feet or 1,300 metres), besides Jenkal-betta (4,558 feet or 1,389 metres). Apart from these mountains in the Manjarabad area, there are low ranges of granite hills running along the northern limits of the district through the Belur, Hassan and Arsikere taluks. Among the range of hills found in the Arsikere taluk is Hirekal-gudda, rising to a height of 3,784 feet or 1,153 metres in which is situated a temple called Malekal-Tirupati. Garudagiri, in the same taluk, is 3,680 feet or 1,122 metres high and is about seven miles north-east of Banavar. It was originally called Nonabankal and has an old fort on it.

Some low hills also pass through Holenarsipur taluk towards Hassan and Channarayapatna. The Indra-betta (Indragiri) in the south-eastern part of Channarayapatna taluk is 3,347 feet or 1,020 metres high and is noted for the 57-foot colossal statue of Gommateshwara on its summit. Among the hills in the Hassan taluk, mention may be made of Seegegudda (4,218 feet or 1,286 metres), Mukundur-betta (3,423 feet or 1,043 metres) and those in the Aidahalli Kaval (3,661 feet or 1,116 metres) and Kattaya Karle Kaval (3,458 feet or 1,054 metres). Hippli-betta (3,486 feet or 1,063 metres) in the western portion of the Arkalgud taluk, Mallappana-betta (3,488 feet or 1,063 metres) in the Holenarsipur taluk and Maharajanadurga (3,300 feet or 1,006 metres) in the Alur taluk are among the other hillocks in the district.

Rivers

Three important rivers, *viz.*, the Cauvery, Hemavathy and Yagachi flow through the Hassan district. While the Hemavathy is a tributary of the river Cauvery, Yagachi is a tributary of the Hemavathy. The Cauvery flows only through a small portion of the district in the Arkalgud taluk. The area of the district consists mainly of the Hemavathy river basin, the only exceptions being certain outlying tracts along the western border, namely, the western portion of the Manjarabad taluk which drains to the Netravathi in the South Kanara district, and also the Arsikere taluk whose waters run north to the Vedavathi in the Chitradurga district.

Cauvery

The river Cauvery rises at Tala-Cauvery in Coorg district in the Western Ghats; it enters the Hassan district at Kadavinahosa-halli, a village in the south of Arkalgud taluk. Continuing north-wards for a few miles through the taluk, near Konanur it turns to the south-east. It flows only for about 15 miles in the taluk and then enters Mysore district. An anicut called Khishnarajakatte has been constructed across this river in the taluk, from which two channels, *viz.*, Kattepura channel and Ramanathapura channel take off for a length of 14½ miles and 19 miles respectively to

irrigate, in all, about 2,920 acres. The Cauvery leaves the district near Keralapura in the south-eastern portion of the taluk.

A popular legend connected with the origin of this river has it that Brahma gave Lopamudre, a daughter of his, to Kavera-muni in fulfilment of the latter's prayer for a child. Thereafter, Lopamudre came to be known as Kaveri (Cauvery) after the name of her foster-father. In order to secure beatitude for him, she resolved to become a river and to " absolve the sins of all those who bathed in her holy waters." But when she became of age, Agastya proposed to marry her. Then Lopamudre or the mortal part of her nature became the wife of Agastya, while Kaveri or the celestial part flowed forth as the river.

Hemavathy

Hemavathy, meaning 'golden river', is also called, in Kannada, *Yenne-hole*, the oily or shining river. It is one of the chief tributaries of the Cauvery; it rises just beyond the limits of the district at Javali, near Melbangadi, in Mudigere taluk of the Chikmagalur district, and flowing south is joined by the Somavathi near the head of the Bund Ghat. It enters the district near Achanalli village in Manjarabad taluk. Flowing south through the taluk, past Sakleshpur, it receives from the south the Aigur river and the Kete-halla at the border of Coorg district. Turning east, it crosses a small portion of Coorg district and re-entering the Hassan district receives from the north the Yagachi river near Gorur. With an easterly course, it flows past Holenarsipur and then bending to the south leaves the district near Nagarathi and enters Mandya district in the north-western side of Krishnarajpet taluk. Flowing south further, it joins the Cauvery on the south-western side of the Krishnarajasagar waterspread. The river flows for a total length of 113 miles within the Hassan district.

The waters of this river are made use of for irrigation in the district by constructing an anicut called Sreeramadevara-katte, about five miles north-west of Holenarsipur. This anicut is said to be over 100 years old. Another major irrigation project, *viz.*, the Hemavathy project is now under execution with its head-works at Gorur in Hassan taluk for further utilising the waters of the river for irrigation purposes. The project, estimated to cost about sixteen crores of rupees, is designed to irrigate about a lakh of acres in Hassan and Mandya districts. (For more details, please see Chapter IV under Irrigation).

As in the case of every important river or holy place in India, there are legends relating to the origin of this river as well. The Hemavathy river is fabled to be Dakshayani, the daughter of Daksha and wife of Ishwara. Daksha once performed a sacrifice to which he did not invite her husband. Feeling insulted at this, Dakshayani cast herself into the fire. When rescued from the fire, she was of the colour of *hema* (gold). She performed penance

with a view to getting reunited with Ishwara, who appeared before her and directed her to take the form of a river for the good of the world.

According to another legendary version, one Ponnatha, who was ruling at Ponnathapura, now a village in Alur taluk, had two wives by name Hema and Honni. He had no issues from either of them for a long time. He, therefore, renounced everything and went to the forest after being initiated to asceticism by sage Agastya. After this, his elder wife Hema took the form of a river, *i.e.,* Hemavathy, for the good of the people and the other, Honni, became *Vahni-Pushkarani, i.e.,* the pond of fire-god at Ramanathapura.

Yagachi

The river Yagachi, also called Badari, rises in the Bababudan hills in Chikmagalur district. Yagachi in Kannada and Badari in Sanskrit means the jujube tree (*Zizyphus*). It is the chief tributary of the Hemavathy and it enters Hassan district near the Siraghatta village in Belur taluk. Flowing south, it receives the Biranji-halla from the west, passes the town of Belur and joins the Hemavathy river near Gorur in the Hassan taluk. The total length of this river in the district is about 41 miles. There are three smaller dams on this river in this district, *viz.,* Bomdihalli dam in Belur taluk, the Halavagil dam, three miles west of Hassan town and the Changravalli dam, three miles from the point of confluence with the Hemavathy, from which irrigation channels are led off. Vote-hole is one of the main tributaries of the Yagachi river and runs for about 19 miles.

There are also several other minor streams and *nalas* in the district, but they are not of much importance in so far as the physical aspects of this district are concerned.

Geology

Geologically, the rocks of this district belong to a most ancient period of earth's history and consist of an older series of schists cut up and intruded by granitic gneisses, which occupy a major portion of the area. In the neighbourhood of Banavar and Arsikere, bold outcrops of coarse granite of a later age are found. The Holenarsipur taluk is important from the geological point of view on account of the different types of rock formations and economic minerals found there which are also very interesting.

Schists

The schistose rocks occur in well-defined bands running in a north-northwest and south-southeast direction. The Seegegudda schist belt is a thin isolated mass of schists in the form of an irregularly-shaped spindle. It is composed mainly of hornblendic schists and quartzites. To the west of Bageshpur, is another prominent belt, called the Doddagudda schist belt composed mainly of ferruginous quartzites and schists. Another interesting belt of schists covering an area of about 100 square miles is seen to the north and

east of Holenarsipur. It consists mostly of hornblendic schists, amphibolites and peridotites. This schist belt is considered to form a connecting link between the less altered schists in the northern districts and the more intensely metamorphosed strips and stringers of schists further south in the Mysore district. Some of the quartzites, kyanite-staurolite schists and micaceous chloritic schists are believed to represent altered phases of original sediments.

A narrow belt of schists extends from about Arsikere upto Nuggihalli in the Channarayapatna taluk, for a total distance of over 20 miles, with a maximum thickness of about a mile near Nuggihalli. This schist belt is economically important in that rich deposits of chromite are enclosed in the dunites and serpentinites of this schist belt.

Granitic gneisses

The gneissic rocks occupy a greater part of the district and consist mainly of a complex of banded gneisses, mainly biotitic, containing occasionally strips and stringers of the older schists. They generally form low hills and gently undulating mounds; this is a very characteristic feature of the landscape of Hassan district. The newer granites are seen especially around Arsikere and Banavar. They form bold hills and stand out as huge bosses with high peaks and consist of a medium even-grained granite or porphyritic granite, grading into granite porphyries, the colour of these several types varying from pink to grey. Surrounding these coarser-grained biotite granites, a finer-grained hornblende-mica-granite gneiss is found persistently and is developed typically at Garudagiri in Arsikere taluk.

The charnockites do not occur in any large mass in the district, but lenticular runs and long linear dyke-like exposures of intermediate to basic rocks of the nature of hornblende or pyroxene granulites are found to a certain extent to the south-west of Arkalgud and also to the south and south-west of Sakleshpur towards the western border of the district.

Dyke rocks

Dykes of dolerite are quite numerous in the district, striking generally east and west. They are particularly abundant in the neighbourhood of the newer granite massifs of Arsikere and Banavar. These dykes cut across all the earlier formations.

Building stones

The gneissic granites, which are found in many parts of the district, are excellent building stones. The material can be quarried from the surface and it preserves an extraordinary freshness. The coarse pink and grey granites of Arsikere and Banavar yield good size-stones. The fine-grained granite found at Shravanabelgola is of excellent quality. The famous monolithic statue of Gommateshwara on Indragiri is carved out of this granite.

Mines and minerals

A number of metalliferous and non-metalliferous minerals occur in the district. But, however, there are not many mineral-based industries of importance in the district except a few based on minerals like chromite at Byrapur, china clay at Bageshpur and asbestos at Holenarsipur.

Asbestos

Asbestos has been worked at a number of places in the Holenarsipur taluk. The workings are mostly concentrated at places like Idegondanhalli, Kabbur, Sunnakal, Kattekere, Bettada-Satenhalli, Mandagere, Thimmalapura and Yenneholeranganbetta. The asbestos available in the taluk is mainly of the amphibole variety and yields stiff fibres. It is mostly used for boiler lagging and as cover over steam pipes. Asbestos fibres are now being manufactured in the newly established factory at Holenarsipur.

Beryl

Crystals of beryl are also found in some of the mica-bearing pegmatites near Dodkadnur in the Holenarsipur taluk. Beryl is the chief source of beryllium, which metal is of great importance in atomic energy establishments. It is also used in the preparation of special alloys with copper.

Chromite

The district is known for its rich deposits of chromite. The mineral is found in lenses, shoots and pockets to a larger extent in the Nuggihalli schist belt. A large number of mines are found all along the belt from Pensamudra (near Arsikere) in the north to Jambur in the south. The mining activity is centred round Pensamudra, Byrapur, Bhaktarahalli, Chikkonahalli, Rayasamudra and Jambur. The production of chromite from these mines between the years 1916 and 1930 averaged about 20,000 tons per year, the bulk of the production being from the Byrapur and Bhaktarahalli mines. Since 1955, however, the production is reported to have fallen and most of the mines except Byrapur are reported to have closed down their operations. The diamond drilling explorations carried out in 1954 indicated that chromite lenses persist in depths and the reserves of high grade ore are estimated roughly at one million tons. The mines at Byrapur, which are worked by underground methods, have reached a depth of more than 300 feet from the surface.

Chromite also occurs to a small extent in the Holenarsipur schist belt, usually as grains and small lumps, in the serpentine rocks. But the ores are mostly of low grade and hence are not of economic importance.

Corundum

Corundum is next to diamond in hardness and is widely used in the manufacture of abrasives. There are deposits of this mineral in the Arsikere and Channarayapatna taluks of the district. There are a number of workings for this mineral in the neighbourhood of Kalyadi and Undiganhal, about eight miles west of Harnahalli in the Arsikere taluk. The largest of the workings

is situated on the eastern slopes of the circular mound to the west of Kalyadi. The area also shows a large number of loose blocks of corundiferous rock containing 20 to 40 per cent corundum.

This mineral is also said to occur at several places in the neighbourhood of Bageshpur. Promising occurrences of this mineral are also reported from the neighbourhood of Basavapur and Agrahara in the Channarayapatna taluk. Again, boundary outcrops of corundum rock, showing pink corundum associated with kyanite, are found about half-a-mile east and north-east of Hardur in the Holenarsipur taluk.

Feldspar

A large number of pegmatite veins found between Holenarsipur and Krishnapur on the Arkalgud road contain feldspar and have even been worked in the past for ceramic purposes. The old workings at Kempinkote were very large, as much as over 600 feet in length. A good amount of prospecting work was carried out here during the period from 1893 to 1896. The ground beneath the old pit was later tested by sinking two shafts to a depth of about 500 feet and driving several thousand feet of cross-cuts. Though a wide zone of gold-bearing schists was intersected, the mine was not taken up for further development as the grade of the ore was considered to be low.

Copper

An old working for copper is noticed on a small mound near Kalyadi, ten miles south-west of Arsikere. Recent survey conducted on an intensive scale at the place and the drillings based on the survey have indicated good copper mineralisation in the quartzites. The survey has revealed the existence of over 1.5 million tonnes of high quality copper ore in the area. It is found from the experimental processing of the ore that it has about 1.5 per cent copper content as against the one per cent recovery required for economic extraction of copper.

Kaolin

Deposits of kaolin (china clay) of a pleasing white colour are found near Bageshpur in the Arsikere taluk. These deposits are being exploited since 1943. One or two washing plants have been constructed at the place for treating the mined clay and refining it for being used as a filler in paper and ceramic industries. The clay fraction obtained as a bye-product, which is rich in alumina, is used for the manufacture of refractory bricks.

Garnet

Loose crystals of garnet of a bright red colour and of sufficient transparency for being classified as gems are found strewn in the gravel and sand-beds of Kempuhole in the Manjarabad taluk. Apart from these isolated crystals, runs of hornblendic schists, showing large-sized crystals of garnet, are found to the north of Yennehosomeranganbetta and in the Modlugudda hills of the Holenarsipur taluk. However, these deposits are not yet being exploited.

Kyanite

Kyanite, in association with staurolite, occurs in a wide band of micaceous schists to the east of Holenarsipur. Crystals of kyanite, often three to four inches in length, are found segregated in patches. Kyanite is also found associated with corundum near Hardur and Mavinkere. This deposit is being exploited for the production of both corundum and kyanite.

Magnesite

Magnesite occurs in small reticulated veins in the altered peridotites and amphibole peridotites to the east north-east of Yenneholeranganbetta and to the west north-west of Idegondanhalli. The occurrences, however, are not much and are not worked anywhere in the district.

Mica

A good deal of work for mica was carried on in the district near Kabbur in the earlier years, but at present not much is being done here, the open pits having reached a depth of 100 feet. The pegmatite veins near Mundoor and Chunchankatte are also known to be mica-bearing. Apart from these places, small blocks of mica are observed in some pegmatite veins in the Holenarsipur and Hassan taluks.

Talc and soapstone

Though deposits of pure white talc have not been noticed, there are numerous occurrences of the slightly grey and green varieties, which go by the name of soapstone or pot-stone, in almost all parts of the district. These have been quarried and used extensively in the past for the construction of temples of great architectural beauty. The world-famous temples of Belur and Halebid, with their innumerable intricate carvings, are fashioned out of this soapstone. In recent years, bricks of various shapes and sizes are cut out of the soft potstone and used for lining soda-recovery furnaces in paper mills.

Vermiculite

Vermiculite is a micaceous mineral which exfoliates and expands 10 to 25 times on heating. The exfoliated product has a great many industrial applications. Deposits of this mineral occur near Malavanghatta in the Channarayapatna taluk and Bageshpur in Arsikere taluk.

Flora*

The Hassan district has a rich and varied flora. The major contributing factors to this variety are the differences in rainfall and topography within the district. Some areas of the eastern *maidan,* a part of the Deccan plateau, may receive an average rainfall of less than 150 mm., while the western mountainous *malnad* gets about 2,500 mm. during the same period. There is, therefore, a rapid transition from scrub to the monsoon forests as

*The section on Flora is contributed by Dr. Cecil J. Saldanha, Principal Indian Investigator, Hassan Flora Project and Vice-Principal, St. Joseph's College, Bangalore.

one moves from east to west. The intermediary stages of dry deciduous, wet deciduous and semi-evergreen form a continuous pattern as the rainfall increases and the plateau breaks up into the lofty peaks and deep valleys of the Western Ghats.

The following are some of the species of plants found in the district :—

Scientific Name	*Local Name*
Alstonia scholaris (L.) R. Br. ..	Hale ; Koduhale
Anogeissus latifolia (Roxb.) Bedd. ..	Bejjalu
Aporosa lindleyana Baill ..	Sarali
Arenga wightii Griff. ..	Dadice
Artocarpus hirsutus Lam. ..	Hebbalasu
Bombax ceiba L. ..	Kempuburage
Boswellia glabra Roxb. ..	Gugguladupa
Butea monosperma (Lam.) Tanb. ..	Palasa ; Muttaga
Calamus pseudo-tenuis Becc. ..	Halubetha
Callicarpa tomentosa (L.) Murr. ..	Ardri ; Rucipatri
Calophyllum elatum Bedd. ..	Poone ; Siruponne
Canthium parviflorum Lam. ..	Karegida
Careya arborea Roxb. ..	Hennumatti ; Guddadahippe
Caryota urens L. ..	Indu ; Bayne
Cassia auriculata L. ..	Avarike
Celtis tetrandra Roxb. ..	Aduva
Centella asiatica (L.) Urban ..	Brahmi ; Vondelaga
Clematis gouriana Roxb. ..	Telejadari
Cochlospermum religiosum (L.) Alston	Arasinaburuga
Dalbergia latifolia Roxb. ..	Bitemara
Dillenia pentagyna Roxb. ..	Kadukanigala ; Muccuhiri
Diospyros ebenum Koenig ..	Bale ; Kari-mara
Diospyros montana Roxb. ..	Jagalugante
Dipterocarpus indicus Bedd. ..	Dhuma
Dodonaea viscosa L. ..	Bandare
Elettaria cardamomum (L.) Mat. ..	Elakki
Emblica officinalis Gaertn. ..	Nelli
Entada pursaetha DC. ..	Hallekayiballi
Erythroxylum monogynum Roxb. ..	Devadaru ; Cembulikayimara
Euphorbia antiquorum L. ..	Jadekalli or Katak-kalli
Gmelina arborea Roxb. ..	Kulimara
Kingiodendron pinnatum (Roxb.) Harms	Ennemara
Lagerstroemia microcarpa Wight ..	Belmatti ; Bilinandi ; Venteak

Scientific Name	*Local Name*
Litsea floribunda Gamb. ..	Halmaddi
Lophopetalum wightianum Arn. ..	Balpale
Macaranga peltata M. Arg. ..	Bettadavare
Mallotus albus M. Arg. ..	Tambittu ; Uppala
Mallotus philippensis (Lam.) M. Arg. ..	Surahonne
Mesua ferrea L. ..	Nagasampige
Michelia champaka L. ..	Sampige
Myristica dactyloides J. Gaertn. ..	Ramapatra ; Kadujajikayi
Nelumbo nucifera Gaertner ..	Tavare
Phyla nodiflora (L.) Greene ..	Nelahippali ; Kerehippalisoppu
Poeciloneuron indicum Bedd. ..	Balgi
Pothos scandens L. ..	Adkebiluballi
Pterocarpus marsupium Roxb. ..	Honne
Pterolobium hexapetalum (Roth.) Sant. & Wagh.	Badubakkenamullu
Rhus mysurensis Heyne ex Wight & Arnott	Sabale
Santalum album L. ..	Gandha ; Srigandha
Sarcostemma acidum (Roxb.) Voigt ..	Soma
Semecarpus anacardium L.f. ..	Karigeru
Tectona grandis L.f. ..	Saguvani ; Jadi
Terminalia bellirica (Gaertn) Roxb. ..	Shantimara
Terminalia chebula Retz. ..	Hardekayimara ; Alalekayimara
Trema orientalis Blume ..	Bende ; Kadubaja
Vateria indica L. ..	Dupa
Vitex altissima L.f. ..	Mairole ; Nevaladimara
Wagatea spicata Dalz. ..	Gajjigaballi

Associations of scrub can be found in the Ramanahalli and Belavathalli State Reserves and along the lower slopes leading to Nagpuri in Arsikere taluk. *Canthium parviflorum* Lam., *Cassia auriculata* L., *Dodonea viscosa* L., *Erythroxylum monogynum* Roxb., *Pterolobium hexapetalum* (Roth.) Sant. & Wagh, *Rhus mysurensis* Heyne and *Tarennia asiatica* (L.) Alston are among the common shrubs in this region. The succulents *Caralluma attenuata* Wt., *Coleus spicatus* Bentham, *Euphorbia antiquorum* L., and *Sarcostemma acidum* (Roxb.) Voigt are admirably adapted to the xerophytic conditions prevailing here. The gravelly soil is sparsely covered by a few prostrate herbs with well-developed rootstocks among which *Andrographis serpyllifolia* Wight and *Stylosanthes mucronata* Willd. might be mentioned.

As climatic and soil conditions improve, a number of deciduous trees establish themselves. The Acacias are early colonisers and are soon replaced by better representatives of the dry deciduous flora. *Anogeissus latifolia* (Roxb.) Bedd., *Boswellia glabra* (Roxb.), *Butea monosperma* (Lam.) Taub., *Cochlospermum religiosum* (L.) Alston, *Diospyros montana* Roxb. and *Semecarpus anacradium* L.f. are characteristic of these communities. A further transition towards a richer flora occurs with the advent of several species of *Terminalia* especially *T. bellirica* (Gaertn.) Roxb., *T. chebula* Retz., and *T. crenulata* Roxb. *Tectona grandis* L.f. is rather limited in distribution but *Santalum album* L. and *Pterocarpus marsupium* Roxb. are common and of considerable economic value. Patches of these forests may be observed at Nagpuri in Arsikere taluk and in the Byaba and Bourdalbore State Reserves in Hassan taluk.

Aquatic Flora

The *maidan* is dotted with numerous irrigation tanks often supporting an interesting aquatic flora. In deep standing water *Nelumbo nucifera* Gaertn., *Nymphaea nouchali* Burm., *Nymphoides cristatum* (Roxb.) O. Kuntze and *N. indicum* (L.) O. Kuntze spread their rounded leaves and raise their attractive flowers. As the depth of water decreases *Cyperus pangorei* Rottb., *Limnophyton obtusifolium* (L.) Miq. and *Typha angustata* Berry & Chaub begin to establish themselves. The grassy meadows around the tanks are interlaced with *Centella asiatica* (L.) Urban and *Phyla nodiflora* (L.) Greene, or studded with the red of *Drosera burmanni* Vahl. Aquatics like *Vallisneria spiralis* L. and *Ottelia alismoides* Pers. usually grow in the canals draining the irrigation tanks.

Rolling green hills with narrow paddies in their shallow valleys are typical of the areas around Arehalli, Sakleshpur and Hethur. Where the soil is rich and humidity high, wet deciduous trees form compact associations especially along streams and on steep slopes. These wooded patches have often been cleared and replanted with coffee and the accompanying shade trees. But where the rainfall is higher and water assured, the canopy has been left standing and the undergrowth cleared and replanted with *Elettaria cardamomum* (L.) Mat. Common among the native trees are *Apodytes beddomei* Mast., *Aporosa lindleyana* Baillon, *Careya arborea* Roxb., *Celtis tetrandra* Roxb., *Gmelina arborea* Roxb., *Litsea floribunda* Gamble, *Mallotus albus* M.Arg., *M. philippensis* (Lam.) M. Arg. and *Walsura trijuga* (Roxb.) Kurz. Shrubs and climbers may be noticed in the uncleared areas. The white of innumerable Jasmines and Mussaendas stands out against the green of the seasonal foliage. The dark coriaceous leaves and large flower bunches of *Shefflera venulosa* Harms and *S. roxburghii* Gamble drape the larger trees in summer. Epiphytes also abound in this zone. As the cold season ends and

the dry hot summer commences, the pale lavender of *Dendrobium barbatulum* Lindl. is replaced successively by the orange of *D. nutans* Lindl., the scented pink of *Aerides crispum* Lindl. and the speckled white of *Rhynchostylis retusa* Bl. The long scarlet flowers of *Aeschynanthus perrottetii* A.DC. and the white bell-shaped corollae of *Fragraea ceylenica* Thunb. enhance the attractiveness of this area during the monsoon.

Soft-wood Species

It is, however, in the larger valleys opening on to the plains that the flora of the district attains its real splendour. The Kabbinala, Kempuhole, Kenchenkumri, Kageneri and Bisle forests, situated in these valleys, receive the full force of the south-east monsoon. They offer good examples of seasonal rain forests. The canopy trees may be over 40 m. tall and are festooned with innumerable climbers and epiphytes. Due probably to regular lumbering operations, the canopy tends to be open. Possibly for the same reason, distinct stratification is not conspicuous. The area abounds in soft-wood species. *Alstonia scholaris* (L.) R. Br., *Artocarpus hirsutus* Lam., *Calophyllum elatum* Bedd., *Dipterocarpus indicus* Bedd., *Kingiodendron pinnatum* (Roxb.) Harms, *Lophopetalum wightianum* Arn., *Michelia champaka* L., *Myristica dactyloides* Gaertn. and *Vateria indica* L. are some of the larger and commercially valuable soft-woods. The hardwoods are represented by *Dalbergia latifolia* Roxb., *Diospyros ebenum* Koenig, *Lagerstroemia microcarpa* Wight. and *Vitex altissima* L.f. It is interesting to note that *Mesua ferrea* L. and *Poeciloneuron indicum* Bedd., so common in the other parts of the Western Ghats, are extremely rare in the Hassan district. As for palms, *Arenga wightii* Griff., *Calamus pseudo-tenuis* Becc., *Caryota urens* L. and *Pinanga dicksonii* Bl. are frequent. Among the common woody climbers are *Phanera phoenicea* (Heyne ex Wt. & Arn.) Bentham., *Entada pursaetha* DC., *Gnetum ula* Brong.and *Wagatea spicata* Dalz. Natural forest glades are usually dotted with *Bombax ceiba* L., *Emblica officinalis* Gaertner, and *Dillenia pentagyna* Roxb. *Trema orientalis* (L.) Blume, *Callicarpa tomentosa* (L.) Murr. and *Macaranga peltata* M. Arg. establish themselves along road cuttings and clean felled areas. The epiphytic *Pothos scandens* L. and *Raphidophora laciniata* (N. Burman) Merr. clothe many tree trunks right through the year.

The herbaceous monsoon flora of these forests is rich and interesting. Besides liverworts, lichens, mosses and ferns, innumerable flowering plants thrive during the wet season. The ground orchids *Nervilea* and *Eulophia* sprout with the first rains. At the peak of the rainy season even the rocks are covered by *Epithema carnosum* Bentham, *Impatiens scapiflora* Heyne, *Sonerila rheedii* W. & A. and *Utricularia striatula* Smith. *Clematis gouriana* Roxb., *Merremia vitifolia* Hallier f., *Naravelia*

zeylanica DC. are some of the climbers appearing as the monsoon wanes. Most of the herbs disappear during the long dry spell but bud forth again with the early showers in May.

Hassan district, with over 1,500 species of vascular plants, affords a good cross-section of the flora of the entire Mysore State.

Forests

The total area under forests in the district is a little over 510 sq. kilometres, which works out to about 200 sq. miles. Thus the percentage of the forest area to the total area of the district is only about 7.5, which is far below the State average of 18.4 per cent. But according to the national forest policy, the forest area should not be less than 33 1/3 per cent, the limit being 20 per cent in the case of *maidan* areas and 60 per cent in respect of *malnad* areas. The district's contribution to the total forest area of the State is only 1.5 per cent.

The chief sources of forest revenue in the district are the sandalwood and some other soft and hard woods exploited for commercial purposes. Besides, there are also minor forest products like *thangadi* and *kakke* barks, tupra leaves, myrobalans, gum, honey and wax, tamarind, *honge* seeds, bark of gulmaver and cinnamum, canes and, to a certain extent, bamboos from the evergreen, which also add to the forest revenue of the district.

The continuous demand for more land for cultivation of coffee and cardamom estates has resulted in the denudation of vast forest areas in the western portions of the district. Of late, it has been the policy of the Government to release lands with unprofitable forest growth for cultivation. Thus, large extents of unproductive forest areas are being cleared and assigned to the landless and other needy persons for agricultural purposes. In the *maidan* areas, it is a difficult problem for the people to meet their requirements of timber, firewood, charcoal and such other requisites. The problem of finding fodder for the cattle in such areas is also severe. However, the State Government, who are alive to these and other relative problems of the people of the district, have taken up several schemes aimed not only at preserving but also developing the forest wealth of the district in all its aspects, under the successive Five-Year Plans (*See* also Chapter IV).

Fauna*

The fauna of Hassan district is rich and varied on account of the three forest types of the district, *viz.*, (i) tropical semi-evergreen, (ii) tropical moist and (iii) sub-tropical wet forests.

*The section on Fauna is contributed by the Zoological Survey of India, Western Regional Station, Poona.

More than fifty species of mammals, approximately two hundred and fifty species of birds and about thirtyfive species of snakes are commonly met with in the district.

Beasts of Prey: Cat-tribe

Major groups of Indian mammals, *i.e.*, cats. civets, mongooses, dogs, bears, otters, rodents, deers, antilopes, etc., are well represented in the district. Of these, the most important ones are the tiger—*Panthera tigris* (Linnaeus), and the panther or leopard—*Panthera pardus* (Linnaeus). The former is comparatively rare and only met with occasionally in heavier forested areas where it preys upon the wild hoofed animals and occasionally on domestic cattle. Panthers, on the other hand, are quite common. They mostly prey upon the smaller deer, pigs, rodents, village dogs and occasionally goats or other smaller domestic animals. The other noteworthy members of the tribe are the leopard cat (*Prionailurus bengalensis* Kerr) and the jungle cat (*Felis chaus* Guldenstaedt). These are smaller in size, *i.e.*, only a little bigger than the domestic cats, and they prey on smaller rodents and birds.

Civets

The civets are closely related to the cat tribe. They have narrow pointed muzzles, long bodies and short legs. Only two civets, *viz.*, the small Indian civet—*Viverricula indica* (Geoffroy) and the common palm civet or toddy cat—*Paradoxurus hermaphroditus* (Pallas), are met with in the district. The former shelters in holes or under-rocks or lies up in grass or under bushes, often near villages; it seeks its food at night, preying upon rats, squirrels, small birds, lizards, insects and their grubs. The palm civets, as the name implies, live generally in the trees. They too seek their food at night and prey upon birds and small mammals; they also feed on fruits.

Mongooses

A long body, short limbs, bright eyes, a sharp snout and a trailing bushy tail are the characteristics of the mongooses. Two species of mongooses are commonly met with in the district; they are the common mongoose—*Herpestes edwardsii* (Geoffroy) and the stripe-necked mongoose (*Herpestes vitticollis* Bennet). The common mongoose is not essentially a creature of the forest. It prefers a scrub jungle for its habitat. It takes shelter in rocks or bushes, hollows of trees and embankments and holes in the ground. It hunts singly, in pairs or in families, preying upon small rodents, snakes, lizards, frogs, insects, scorpions, centepeds, wild birds, their eggs and poultry. It also eats fruits, roots and carrion. The stripe-necked mongoose prefers forests, where it preys on small rodents, birds, reptiles and ground-dwelling invertebrates.

Striped hyena

Hyenas resemble the dog family in general appearance and build. Their legs and feet are typically those of a dog; but the

structure of the skull, the teeth and other points of the anatomy are more like that of the cat family. Only one species of hyena, *i.e.,* the striped hyena—*Hyaena hyaena* (Linnaeus), is found in the district. It is a large dog-like animal with a massive head and longer front legs of buff colour with black stripes. It frequents the cultivated areas, lies hidden in caves, holes and hollows during the day. It is mostly active at night and is a well-known scavenger, living chiefly on animal carcases. Occasionally it may carry off dogs, goats or sheep from the vicinity of the villages.

Dog Tribe: Wolf

Four members of the dog-tribe are found in the district. They are (i) the wolf (*Canis lupus* Linn), (ii) the jackal (*Canis aureus* Linnaeus), (iii) the Indian fox (*Vulpes bengalensis* Shaw) and (iv) the wild dog (*Cuon alpinus* Pallas). The Indian wolf (*Canis lupus* Linnaeus) is seen rarely. It is a large dog-like animal with a sandy-fawn coat stippled with black. It prefers a more bare and open region for its habitat and lies in fields or patches of scrub. It hunts by day as well as by night and mostly preys upon young ones of the bigger hoofed-animals, and larger rodents.

Bears, particularly the Sloth Bear (*Melursus ursinus* Shaw), are also found in the district.

Jackal

The jackal (*Canis aureus* Linnaeus) is the most commonly met member of the dog-tribe in the district. It is of the size of a pariah dog. Its long-drawn eerie howling at dusk or just before dawn is a familiar sound of the wilderness. The jackals live about villages, sheltering in holes in the ground among ruins, or in dense grass and scrub. They usually come out at dusk and retire at dawn, but in cloudy weather they may be met with during the day time also. They go about singly, in pairs or in small packs in search of food. The jackals are versatile in their feeding habits. They enjoy sugarcane, small berries, melons, carrion and offal equally. Occasionally they may prey upon the small, helpless or sick smaller animals.

Fox

The Indian fox—*Vulpes bengalensis* (Shaw) likes the open country and rarely enters forests. It lives in burrows dug by itself in open ground or in scrub. Like the jackal, it is also active during the hours of darkness. It preys upon small mammals, reptiles and insects. By its consistent destruction of rats and land crabs, it does real service to the farmer. Like the jackal it too turns vegetarian on occasions.

Wild dog

The Indian wild dog—*Cuon alpinus* (Pallas) resembles very much the domestic dog, but has shorter legs and muzzle and a distinctive red coat. The wild dogs keep entirely to the forests

and hunt in packs during the day. They prey upon deer, both large and small, wild pig and young ones of larger hoofed-animals. While on scent of their intended or injured prey, they do not tolerate any interference even by the larger beasts of prey like the panther, bear or the tiger.

The other notable members of the dog-tribe found in the district are the otters, *i.e.*, the Indian otter and the clawless otter.

Bats

More than half a dozen species of bats are met with in the district. Three out of these, *viz.*, (i) the Indian flying fox (*Pteropus giganteus* Brunnich), (ii) the fulvous fruit bat (*Rousettus leschenanlti* Desmarest) and (iii) the short-nosed fruit bat (*Cynopterus sphinx* Vahl) are notable on account of their nocturnal and much destructive raids on fruit trees and orchards.

Primates

In so far as the primates are concerned, two species of monkeys, *viz.*, (i) the bonnet macaque—*Macaca radiata* (Geoffroy), and (ii) the lion-tailed macaque (*Macaca silenus* Linnaeus), two species of langurs, *viz.*, (i) the common langur—*Presbytis entellus* (*Semnopithecus entellus*) (Dufresne), and (ii) the Nilgiri-langur (*Kasi johnii* Fisch) and one species of loris, *viz.*, slender loris—*Loris tardigradus* (Linnaeus), are found in the district. The lion-tailed macaque, the Nilgiri-langur and the slender loris have, of late, been drastically reduced in numbers.

Rodents

Numerous species of mice, rats, porcupines, rabbits and squirrels are found in the district, both in the open cultivation areas and the forests. Rodents are known for their destruction of crops and fruits. Of the squirrels, the Indian giant squirrel (*Ratufa indica* Erxleben) and the large brown flying squirrel (*Petaurista phillipensis*) are worth a special mention. They keep to well-wooded areas and live in holes and hollows of the large trees. In addition to these, the Indian hare (*Lepus nigricollis* F. Cuvier) and the Indian porcupine—*Hystrix leucura* (Gray & Hardwicki) are also commonly met with.

Hoofed Animals: Wild Boar

A number of hoofed animals, *i.e.*, oxen, antelopes, deer and pig, etc., are found in the district. The Indian wild boars (*Sus scrofa* Linnaeus) live in high grass, scrub and sometimes in forests. They are omnivorous, living on crops, roots, tubers, insects, snakes, offal and carrion. They feed early in the mornings and late in the evenings. No animal is more destructive to crops than this boar.

Bison

The Indian bison (*Bibos gaurus* H. Smith) is the only representative of the oxen found in the district. Of late, their

numbers have dwindled considerably. It is essentially an animal of the thick forests. It grazes early in the mornings; during hot hours it retires to shady spots in the seclusion of the forest. The food of the bison is chiefly grass. Occasionally it browses on leaves also.

Antelopes: Black Buck

Three species of antelopes are met with in the district. The black buck—*Antelope cervicapra* (Linnaeus), though essentially an animal of the open plains, has entered the open forests which contain wide expanse of grass to seek refuge from ruthless persecution. Of late, their numbers have also gone down considerably. They are usually seen in herds. They feed on grass and various crops in the mornings and again in the afternoons.

Four-horned antelope

The four-horned antelope—*Tetraceros qudricornis* (Blainv) as the name implies, is the only antelope which has four horns. It is a small, shy animal keeping to cover in undulating or hilly country. It shelters in tall grass and scrub. It is seen both singly and in pairs and is active both at dusk and dawn.

Nilgai

The nilgai or the blue bull—*Boselaphus tragocamelus* (Pallas)—is largest of the Indian antelopes. It avoids dense forests; hills sparsely dotted with trees or undulating plains covered with scrub and grass are its favourite haunts. They are generally found in herds. They enter cultivated fields and damage the crops, their feeding times being both mornings and evenings.

Deer

The sambar (*Rusa unicolor* Kerr), the spotted deer—*Axis axis* (Erxleben), the barking deer—*Muntiacus muntjak* (Zimmermann), and the mouse deer—(*Moschiola meminna*) are the four species of deer met with in the district. Of these, the spotted deer are less nocturnal than the other three. While the sambar, barking deer and mouse deer are met with either singly or in pairs, the spotted deer are mostly found in herds. They live on grass and leaves, occasionally going in for berries.

Birds

More than 250 species of birds are found in the district. About fifty of these are migratory in nature, *i.e.*, summer and winter visitors. The species of birds that live in or near water for food and protection are chiefly the moorhens, pelicans, cormorants, darters, herons, bitterns, egrets, storks, ducks, jacanas, snipes, plovers, curlews, sand-pipers and terns. Most of the storks, ducks, plovers and sand-pipers are migratory, visiting the district in winter, *i.e.*, from October to March.

Among the birds of prey, eagles, hawks, buzzards, kites, vultures and owls are commonly met with in the district. Most of these also are migratory in nature, visiting the district in winter. Pigeons, doves, pheasants, patridges, fowls and quails

are among the game birds which are well-represented in the district. Besides, perching birds like larks, swallows, shrikes, orioles, drongos, fly-catchers, minivets, bulbuls, babblers, warblers, wrens, thrushes and sunbirds are also found in good numbers throughout the district. Many of them are good songsters.

In addition to the above-mentioned groups of birds, parrots, cuckoos, king fishers, rollers, bee-eaters, horn-bills, barbets and wood-peckers also adorn the forested tracts of the district.

Snakes

Out of the four poisonous groups of Indian snakes, *viz.*, the cobras, vipers, kraits and sea-snakes, only the first two are found in the district. Although more than 30 types of snakes are commonly met with, only four of them are poisonous. They are (1) the Indian cobra (*Naja naja* Linn), (2) the king cobra (*Naja hannah* Cantor), (3) the humb-nosed viper (*Ancistrodon hynale* Merrem) and (4) the pit-viper (*Trimeresurus malabaricus* Jerdon). The rest of the species are non-poisonous and harmless in bite. A good number of them are useful as they prey upon the smaller vermin. While the common rat snake (*Ptyas mucosus* Linn) is the most common and important member of this group, there are also quite a few others, some of them quite colourful, such as (1) the golden tree snake (*Chrysopelea ornata* Shaw), (2) the green keel back (*Macropisthodon plumbicolor* Cantor), (3) the bronze-back snake (*Ahaetula grandoculis* Boulenger), (4) the brown whip snake (*Dryophis pulverulentus* Deen & Bile), (5) the coral snake (*Callophis nigrescens* Gunther), and (6) the common Indian coral snake (*Callophis bibroni* Jan).

Shooting of animals in the State forests is strictly prohibited. However, licences are issued for shooting game or dangerous animals in special circumstances, in accordance with the provisions of the Shooting and Game Rules framed by the State Government.

Hassan being a *malnad* district, mortality from reptiles and wild animals is to be expected. According to the 1961 Census figures, deaths due to snake-bites in the district during the five year period from 1955 to 1960 numbered 99, the taluks of Arsikere and Holenarsipur accounting for the highest number of deaths, *viz.*, 20 and 19 respectively. Similarly, during the period from 1961 to 1967, 35 deaths due to snake-bites and four from wild animals were reported in the district. According to the police reports, there were three such deaths in the district during 1968, while there were none during the years 1966 and 1967. There were, however, 14 deaths due to snake-bites during 1969 and 5 during 1970. The latter year also saw four deaths due to wild animals.

Climate

The district has an agreeable climate. The year may be divided into four seasons according to the climatic conditions. The summer season is from March to the end of May and it is followed by the south-west monsoon season lasting up to about the end of September. October and November may be termed the post-monsoon or retreating monsoon season. The period from December to February is the dry season with generally clear and bright weather.

Rainfall

There were 34 rain-gauge stations in the district in 1969 in working condition, and records of rainfall are available for eight stations for periods ranging from 63 to 80 years. The details of the rainfall at these stations and for the district as a whole are given in Tables 1 and 2 at the end of the chapter. The average annual rainfall in the district is 1,040.7 millimetres or 40.97 inches. The western part of the district in the vicinity of the Western Ghats gets heavy rainfall. The rainfall decreases rapidly from the west to the east. It varies from 2,348.7 millimeters or 92.47 inches at Sakleshpur in the west to 673.1 millimetres or 26.50 inches at Arsikere in the east. Most of the rainfall in the district is confined to the period from May to October, July being the rainiest month. The rainfall during the south-west monsoon months, *i.e.*, from June to September, constitutes only about 59 per cent of the annual normal rainfall. The rest of the rainfall is received mainly during the pre-monsoon months of April and May and the post-monsoon season. The rainfall during the pre-monsoon months is mainly in the form of thundershowers.

The variations in the annual rainfall from year to year is not large. In the 50-year period from 1901 to 1950, the highest annual rainfall amounting to 140 per cent of the normal occurred in 1933, while the lowest annual rainfall which was 68 per cent of the normal was received in 1908. In this 50-year period the annual rainfall in the district was less than 80 per cent of the normal in five years, none of them being consecutive. However, considering the annual rainfall at the individual stations, two consecutive years of such low rainfall have occurred thrice at Channarayapatna, twice at Sakleshpur and once each at four out of the six remaining stations. It will be seen from Table 2 that the annual rainfall in the district was between 900 and 1,200 millimetres or 35.43 and 47.24 inches in 31 years out of 50.

On an average, there are 68 rainy days (*i.e.*, days with a rainfall of 2.5 millimetres or 10 cents or more) in a year in the district. This number varies, as in the case of rainfall, from 109 days at Sakleshpur to 48 days at Arsikere.

The heaviest rainfall in 24 hours recorded at any station in the district was 228.6 millimetres or 9.0 inches at Sakleshpur on July 11, 1941. A statement showing the raingauge station-wise annual rainfall in the district for the period from 1951 to 1969 is given at the end of the chapter as Table 3.

Temperature

There is a meteorological observatory in the district at Hassan. The records of this observatory may be taken as representative of the climatic conditions prevailing in the district in general. From about the beginning of March, temperature increases steadily. April is generally the hottest month with the mean daily maximum temperature at 33.5°C. (92.3°F) and the mean daily minimum at 19.7°C. (67.5°F.). During the summer season, on individual days, the temperature sometimes goes over 35°C. (95.0°F). With the advance of monsoon early in June, there is an appreciable drop in temperature. Towards the close of the monsoon season by about the end of September, there is a slight increase in day temperature, and a secondary maximum in day temperature is reached in October. Later, the weather becomes progressively cooler. December is generally the coldest month with the main daily maximum temperature at 26.9°C. (80.4°F.) and the mean daily minimum at 14.3°C. (57.7°F.).

The highest maximum temperature recorded at Hassan was 37.8°C. (100.0°F.) on May 5, 1906, while the lowest minimum was 6.7°C. (44.1°F.) on December 5, 1907.

Humidity

Relative humidities are generally high in the south-west monsoon and the post-monsoon seasons. February and March are the driest months of the year when the relative humidities in the afternoon are less than 35 per cent.

Cloudiness

The skies are heavily clouded or overcast during the monsoon season. During the post-monsoon season, the skies are moderately clouded. In the rest of the year, the skies are mostly clear or lightly clouded. In the summer season, there is some increase in the cloudiness in the afternoons.

Winds

The winds are, in general, light with some increase in force during the late summer and early monsoon seasons. During the period from April to September, winds blow mostly from directions between south-west and north-west. Winds are variable in directions during October. During the post-monsoon and winter seasons, the winds blow mostly from directions between north-east and south-east. In March, the winds are variable in direction.

Special weather phenomena

During October and November, some of the depressions and cyclonic storms, which originate in the Bay of Bengal, cross the

east coast and move across the peninsula. Such depressions and storms pass through regions to the south of the district causing widespread heavy rain and high winds. Thunder-storms occur during the period from March to October, April and May having the highest incidence. Occasional fogs occur during the cold season.

Tables 4, 5 and 6 appended at the end of the chapter give the temperature and humidity, mean wind speed and special weather phenomena respectively for Hassan.

TABLE 1

Normals and Extremes of Rainfall in Hassan District

(Average for 50 years from 1901 to 1950)

Station	No. of years of data	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Annual	Highest annual rainfall as % of normal & year**	Lowest annual rainfall as % of normal & year**	Heaviest rainfal in 24 hours* (Amount mm.)	Heaviest rainfal in 24 hours* (Date)
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Hassan	50 a	4.3	7.6	10.7	52.8	115.3	84.1	150.4	99.3	100.1	160.3	76.3	17.3	878.9	147	58	163.2	1958 Oct. 8
	b	0.3	0.5	0.8	4.0	7.4	8.7	13.5	9.6	7.3	9.4	4.8	1.2	67.5	(1903)	(1908)		
Sakleshpur	50 a	5.6	5.1	9.9	51.8	113.5	397.3	859.0	452.1	170.2	182.4	81.5	20.3	2348.7	153	66	228.6	1941 Jul. 11
	b	0.4	0.5	0.8	3.9	7.0	18.4	25.9	21.9	13.6	10.6	4.8	1.1	108.9	(1932)	(1949)		
Arkalgud	50 a	4.1	7.1	8.1	57.9	109.2	98.5	221.0	127.0	77.5	143.3	75.4	18.8	947.9	162	57	183.4	1911 Jul. 19
	b	0.3	0.4	0.8	4.2	7.1	9.5	17.2	13.1	6.8	8.6	4.7	1.1	73.8	(1924)	(1938)		

Table 1 (*concld.*)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Belur	50 a	6.6	4.8	8.9	55.6	122.7	125.0	248.4	102.6	84.8	146.1	74.2	21.3	1001.0	148 (1902)	54 (1938)	145.5	1899 Apr. 18
	b	0.6	0.4	0.8	3.8	7.5	9.5	14.6	9.6	7.0	8.4	4.7	1.2	68.1				
Channaraya-patna	50 a	4.3	2.3	10.2	49.8	118.1	56.6	66.3	68.6	102.9	147.6	72.9	13.5	713.1	156 (1946)	50 (1908)	147.1	1944 Sep. 20
	b	0.4	0.3	0.6	3.3	7.2	4.4	6.8	5.9	6.0	8.4	4.3	0.9	48.5				
Arsikere	50 a	5.8	5.8	6.9	34.8	96.8	54.4	67.8	77.2	106.9	136.9	67.3	12.5	673.1	163 (1933)	43 (1908)	143.5	1935 Oct. 19
	b	0.4	0.3	0.7	2.6	6.3	4.5	6.3	6.3	7.3	8.2	4.2	0.9	48.0				
Holenarsipur	50 a	5.1	5.3	10.4	53.9	104.9	56.9	98.5	70.4	77.5	147.6	65.3	12.9	708.7	153 (1933)	64 (1936)	142.2	1887 Oct. 9
	b	0.3	0.3	0.8	3.6	7.0	5.3	8.6	6.3	5.6	8.7	4.7	1.0	52.2				
Alur	50 a	4.3	5.1	7.6	65.3	109.7	126.0	252.5	128.3	93.2	166.9	76.7	18.3	1053.9	142 (1912)	56 (1938)	170.9	1887 Oct. 9
	b	0.3	0.4	0.7	3.7	7.0	10.6	17.3	12.4	7.7	9.1	4.5	1.2	74.9				
Hassan District	a	5.0	5.4	9.1	52.7	111.3	124.9	245.5	140.7	101.6	153.9	73.7	16.9	1040.7	140 (1933)	68 (1908)		
	b	0.4	0.4	0.7	3.6	7.1	8.9	13.8	10.6	7.7	8.9	4.6	1.1	67.8				

(*a*) Normal rainfall in millimetres. (*b*) Average number of rainy days (days with rain of 2.5 mm. or more). *Based on all available data upto 1958.
** Years given in brackets.

TABLE 2

Frequency of Annual Rainfall in Hassan District

(Data 1901—1950)

Range in mm.	*No. of years*	*Range in mm.*	*No. of years*
701— 800 ..	4	1,101—1,200 ..	7
801— 900 ..	6	1,201—1,300 ..	5
901—1,000 ..	9	1,301—1,400 ..	2
1,001—1,100 ..	15	1,401—1,500 ..	2

TABLE 3

Statement showing the annual rainfall recorded in the various raingauge stations in Hassan District during the period from 1951 to 1969

(In millimetres)

Name of raingauge station	1951	1952	1953	1954	1955	1956	1957	1958	1959
1	2	3	4	5	6	7	8	9	10
Hassan Taluk									
1. Hassan Observatory ..	780.5	756.4	1,079.7	882.5	869.8	562.9	804.9	1,058.6	1,062.5
2. Dudda ..	451.6	594.1	626.1	560.6	686.3	452.4	678.7	878.2	571.3
3. Salagame ..	..	..	..	..	..	..	..	..	..
4. Kattaya ..	477.5	770.1	798.8	780.5	769.6	1,034.8	884.7	1,083.9	739.2
5. Hassan (S.Rly.) ..	..	..	..	..	..	..	..	..	..
6. Shantigrama ..	714.3	767.6	931.2	763.5	389.9	671.3	486.4	565.5	704.5
Sakleshpur Taluk									
1. Sakleshpur ..	1,938.1	1,893.0	2,454.4	2,006.7	1,455.8	2,024.0	1,880.7	2,994.0	2,891.6
2. Yeslur ..	1,844.3	1,661.7	2,351.3	2,228.9	1,307.3	2,946.7	2,167.1	3,910.3	904.9
3. Hanbal ..	3,173.7	2,821.9	3,758.7	3,136.9	2,321.6	3,265.4	2,809.2	3,877.9	3,895.9
4. Maranahalli ..	5,147.8	4,808.2	5,798.3	5,947.4	4,695.7	6,608.3	5,782.8	7,235.0	7,642.2
5. Ossoor Estate ..	1,755.4	..	3,304.8	2,732.5	1,693.2	2,328.4	..	2,743.0	2,859.9
6. Sukravarasanthe ..	..	..	..	..	..	..	..	..	..
7. Ubban Estate ..	1,385.1	1,259.8	2,108.2	1,650.2	..	1,863.6	..	2,106.6	2,055.4
Alur Taluk									
1. Alur ..	901.2	721.5	1,099.6	890.8	796.7	869.2	907.6	1,067.3	1,306.1
2. Kenchammana-Hoskote	1,922.8	1,717.3	2,637.8	2,261.4	1,442.0	2,440.4	2,098.8	2,298.3	2,303.6
Belur Taluk									
1. Belur ..	1,107.8	706.1	1,233.4	750.1	879.9	942.0	967.2	1,036.9	1344.9
2. Halebid ..	706.4	465.1	339.6	311.9	562.6	622.1	794.3	783.7	296.0
3. Gundehalli ..	..	..	..	..	..	..	..	..	..
4. Arehalli ..	1,624.3	1,484.9	2,514.6	1,565.4	946.4	1,891.0	1,707.1	2,274.7	2,197.3

TABLE 3 (*contd.*)

(In millimetres)

Name of raingauge station	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969
1	11	12	13	14	15	16	17	18	19	20
Hassan Taluk										
1. Hassan Observatory ..	701.3	1,234.6	1,171.1	795.6	1,323.7	363.9	837.4	598.3	490.2	682.6
2. Dudda ..	381.2	650.5	566.4	395.2	788.9	..	619.9	379.0	..	..
3. Salagame ..	..	..	..	..	..	..	..	..	..	476.0
4. Kattaya ..	618.4	838.9	661.7	614.2	1,019.1	..	..	..	..	420.4
5. Hassan (S.Rly.) ..	..	..	1,177.3	757.4	1,208.0	..	745.2	636.8	481.1	642.4
6. Shantigrama ..	614.4	973.7	427.1	369.2	635.2	..	466.2	410.2	..	..
Sakleshpur Taluk										
1. Sakleshpur ..	2,057.5	4,075.7	2,639.8	2,114.9	2,174.9	1,896.2	2,127.4	1,995.3	1,904.0	1,909.6
2. Yeslur ..	1,968.1	3,549.1	..	..	..	..	1,345.2	..	..	1,616.0
3. Hanbal ..	3,033.2	6,270.8	..	..	..	..	1,875.0	..	..	620.2
4. Maranahalli ..	5,540.0	7,504.3	5,160.9	4,198.3	6,828.2	880.9	..	4,644.3	..	3,218.8
5. Ossoor Estate ..	2,218.6	3,699.6	2,347.1	1,915.7	1,869.3	..	1,821.2	1,805.1	1,857.2	1,653.2
6. Sukravarasanthe ..	..	..	..	..	464.0	2,631.7	..	3,009.2	..	2,491.8
7. Ubban Estate ..	1,644.6	2,353.7	2,072.9	1,670.3	..	..	..	1,362.6	..	1,528.2
Alur Taluk										
1. Alur ..	1,660.6	1,408.7	890.0	648.9	1,318.6	..	1,065.9	986.3	833.8	942.8
2. Kenchammana-Hoskote	1,511.6	..	..	..	..	..	..	..	..	..
Belur Taluk										
1. Belur ..	993.2	1,540.8	1,185.0	961.5	1,377.9	311.7	1,052.2	899.4	804.1	878.6
2. Halebid ..	582.8	969.8	982.9	759.9	1,014.9	..	679.6	475.5	303.0	129.1
3. Gundehalli ..	..	..	..	..	1,793.7	873.7	1,160.6	1,389.8	..	..
4. Arehalli ..	1,127.5	..	1,966.0	2,516.1	2,686.2	..	1,699.4	2,333.3	..	..

TABLE 3—*contd.*

(In millimetres)

Name of raingauge station	1951	1952	1953	1954	1955	1956	1957	1958	1959
1	2	3	4	5	6	7	8	9	10
Channarayapatna Taluk									
1. Channarayapatna ..	692.3	696.4	992.8	937.6	791.4	795.5	637.0	851.7	796.3
2. Hiresave ..	688.3	562.4	1,108.2	816.6	612.9	793.0	736.3	733.7	672.4
3. Bagur ..	629.4	627.9	838.5	766.1	669.5	821.9	602.5	789.2	..
4. Nuggihalli ..	592.6	621.8	932.4	803.4	710.7	708.7	414.5	660.7	548.6
Arsikere Taluk									
1. Arsikere ..	556.3	619.7	830.3	624.9	602.0	386.1	792.1	796.0	739.7
2. Banavara ..	480.3	182.6	782.3	645.9	648.5	421.4	259.8	672.2	292.1
3. Kanakatte ..	419.3	362.5	821.4	325.4	500.1	472.2	492.0	427.4	675.9
4. Arsikere (S. Rly.) ..	..	..	..	..	..	..	..	..	..
5. Gandasi ..	..	531.1	652.0	471.7	674.9	..	295.9	584.9	499.6
Holenarsipur Taluk									
1. Holenarsipur ..	661.9	603.9	..	751.4	753.3	878.8	750.2	1,231.6	997.4
2. Sriramadevara Dam ..	664.2	732.5	756.7	839.7	604.8	531.1	332.5	533.8	449.9
3. Hallimysore ..	515.9	..	930.4	819.7	688.1	566.9	492.6	486.4	671.8
4. Konanur ..	..	..	828.8	400.1	..	707.9	639.6	729.9	972.0
5. Mallipatna ..	..	..	..	..	..	..	..	..	..
Arkalgud Taluk									
1. Arkalgud ..	852.4	572.0	1,083.0	838.7	676.4	799.6	932.9	1,182.0	1,159.5

TABLE 3—*concld.*

(In millimetres)

Name of raingauge station	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969
1	11	12	13	14	15	16	17	18	19	20
Channarayapatna Taluk										
1. Channarayapatna ..	496.8	774.6	725.1	659.6	741.1	318.3	691.6	492.1	614.9	482.3
2. Hiresave ..	843.4	1,052.3	1,039.7	807.3	1,062.8	593.5	1,004.3	515.6	701.3	605.1
3. Bagur ..	..	..	..	1,123.4	733.6	350.8	900.9	418.7	..	445.8
4. Nuggihalli ..	363.0	436.1	365.9	340.7	751.0	176.1	442.5	324.5	..	..
Arsikere Taluk										
1. Arsikere ..	664.8	728.9	975.3	677.2	554.7	265.5	858.9	579.9	537.6	835.7
2. Banavara ..	457.2	488.6	530.7	129.4	260.3	..	403.3	199.3	..	462.8
3. Kanakatte ..	351.0	332.8	582.5	276.6	403.9	..	776.7	..	..	387.7
4. Arsikere (S.Rly.) ..	..	..	896.8	606.0	534.2	..	..	..	493.8	726.6
5. Gandasi ..	595.2	162.5	..	..	..	..	..	..	..	..
Holenarsipur Taluk										
1. Holenarsipur ..	672.4	865.7	958.9	590.3	745.5	182.9	764.9	545.9	786.1	567.9
2. Sriramadevara Dam ..	506.7	509.1	585.3	275.7	798.1	266.1	298.9	538.4	600.8	663.6
3. Hallimysore ..	110.2	471.6	702.7	..	..	..	..	..	..	..
4. Konanur ..	673.2	968.3	942.5	944.2	1,006.2	510.4	..	..	..	859.9
5. Mallipatna ..	..	..	..	..	1,242.5	686.2	..	..	..	1,459.7
Arkalgud Taluk										
1. Arkalgud ..	779.9	1,092.5	1,164.7	620.7	924.3	613.9	770.6	..	674.9	717.5

(*Source :* Bureau of Economics and Statistics, Government of Mysore, Bangalore).

TABLE 4

Normals of Temperature and Relative Humidity (Hassan)

Month	Mean Daily Maximum Temperature	Mean Daily Minimum Temperature	Highest maximum ever recorded		Lowest minimum ever recorded		Relative Humidity	
							0830*	1730*
	%	%	%	Date	%	Date	%	%
January ..	28.1	14.0	32.2	1955 Jan. 17	7.8	1899 Jan. 28	73	40
February ..	30.4	15.4	35.0	1906 Feb. 23	8.3	1898 Feb. 2	69	33
March ..	33.0	17.5	36.7	1934 Mar. 31	9.4	1898 Mar. 12	67	31
April ..	33.5	19.7	37.2	1942 Apr. 21	14.4	1905 Apr. 1	72	48
May ..	31.8	19.9	37.8	1906 May 5	14.4	1923 May 7	76	63
June ..	27.1	19.2	34.4	1953 Jun. 6	16.1	1936 Jun. 4	83	77
July ..	25.2	18.7	31.1	1905 Jul. 5	15.0	1918 Jul. 8	86	82
August ..	25.8	18.6	31.1	1932 Aug. 24	15.6	1925 Aug. 20	85	80
September ..	27.1	18.2	32.2	1905 Sep. 30	13.9	1906 Sep. 28	83	77
October ..	27.8	18.2	32.2	1905 Oct. 1	11.7	1897 Oct. 30	81	69
November ..	27.1	16.4	31.1	1927 Nov. 6	8.3	1904 Nov. 22	76	58
December ..	26.9	14.3	31.1	1926 Dec. 8	6.7	1907 Dec. 5	75	47
Annual ..	28.7	17.5					77	59

* Hour I.S.T.

TABLE 5

Mean Wind Speed in Kilometre per hour (Hassan)

January	*February*	*March*	*April*	*May*	*June*	*July*	*August*	*September*	*October*	*November*	*December*	*Annual*
5.0	4.8	5.5	6.9	9.3	12.1	12.2	10.8	8.9	5.6	4.7	5.0	7.6

TABLE 6

Special Weather Phenomena (Hassan)

Mean No. of days with	*Jan.*	*Feb.*	*March*	*April*	*May*	*June*	*July*	*Aug.*	*Sep.*	*Oct.*	*Nov.*	*Dec.*	*Annual*
Thunder	0.1	0.5	1.5	5.7	8.0	1.2	0.2	0.9	1.2	1.6	0.5	0.1	21.5
Hail	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2
Dust-storm	0.0	0.0	0.0	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.2
Squall	0.2	0.0	0.2	0.7	1.2	2.0	0.4	0.3	0.0	0.1	0.0	0.0	5.1
Fog ..	2.9	2.8	1.2	0.9	0.0	0.0	0.0	0.0	0.3	0.5	1.1	3.7	13.4